

## REMARKS

### INTRODUCTION

In accordance with the foregoing, no claims have been amended. Claims 1, 2, 5, 8, 9 and 12 are pending and under consideration.

### CLAIM REJECTIONS

Claims 1, 2, 5, 8, 9 and 12 were rejected under 35 USC 103(a) as being unpatentable over the Applicant's Admitted Prior Art (hereinafter "AAPA") in view of Omura et al. (US 6,559,894) (hereinafter "Omura") and further in view of Fimoff et al. (US 7,035,353) (hereinafter "Fimoff").

Fimoff discusses a channel estimation method blending correlation and least-squares based approaches. In the background section of Fimoff, it is discussed that Figure 4 of Fimoff shows a correlation channel estimator 40 that can be used for the channel estimator 14 to estimate the channel in order to initialize the equalizer 12. The correlation channel estimator 40 includes a cross-correlator 42 that cross-correlates the received signal with the training sequence stored in a memory 44 and a level thresholder 46 that sets to zero any correlation coefficients that are below a predetermined threshold. Accordingly, the correlation channel estimator 40 produces a channel estimate  $\hat{h}$ . Fimoff, 6:39-6:48 and Figure 4.

#### Claims 1, 2 and 5

Claim 1 recites: "...wherein said channel estimation unit includes: a correlation cumulation unit calculating and cumulating correlation values between the received signal and the field synchronizing signal; and an estimation decision unit deciding the channel estimation values by applying an adaptive threshold value or a fixed threshold value to the cumulated correlation values..."

The Office Action relies on Fimoff to discuss this feature of claim 1 in both the body of the Office Action and the "Response to Arguments" section. However, it is respectfully submitted that claim 1, even under the standard of broadest reasonable interpretation, patentably distinguishes over Fimoff. In particular, the Office Action notes that Fimoff teaches applying a predetermined threshold value, without discussing the recited feature of claim 1 of applying an adaptive threshold value or a fixed threshold value to the cumulated correlation values.

In Fimoff, with particular reference to Figure 4 and 6:39-6:48, the correlation channel estimator 40 estimates the channel in order to initialize the equalizer 12. The correlation channel estimator 40 includes the cross-correlator 42 that cross-correlates the received signal with the training sequence stored in a memory 44 and **the level thresholder 46 that sets to zero any correlation coefficients that are below a predetermined threshold.**

By contrast, claim 1 recites an estimation decision unit that removes unnecessary noise by applying **an adaptive threshold algorithm or a fixed threshold algorithm** to the cumulated correlation values. The channel estimation value, which is a delay profile of the received signal, is then obtained which is input to the filter, and the equalization error is calculated in response to the operation mode, and the filter coefficient is updated corresponding to the calculated equalization error. This technical feature provides that convergence speed of coefficients of filters can be improved by estimating a delay profile of a received signal, thereby initializing an FIR filter and an IIR filter. This enables the coefficients of the filters to converge in a short period of time, thereby improving a convergence speed of equalization of an equalizer.

Claims 2 and 5 depend on claim 1 and are therefore believed to be allowable for at least the foregoing reasons.

Withdrawal of the foregoing rejection is requested.

#### **Claims 8, 9 and 12**

Claim 8 recites: "...an estimation decision unit deciding the channel estimation value by applying an adaptive threshold value or a fixed threshold value to the cumulated correlation values ..." The Office Action relies on Fimoff to discuss this feature of claim 8. As discussed above in regards to claim 1, Fimoff only discusses a correlation channel estimator 40 includes the cross-correlator 42 that cross-correlates the received signal with the training sequence stored in a memory 44 and **the level thresholder 46 that sets to zero any correlation coefficients that are below a predetermined threshold.**

By contrast, claim 8 recites an estimation decision unit that removes unnecessary noise by applying **an adaptive threshold algorithm or a fixed threshold algorithm** to the cumulated correlation values.

Claims 9 and 12 depend on claim 8 and are therefore believed to be allowable for at least the foregoing reasons.

Withdrawal of the foregoing rejections is requested.

**CONCLUSION**

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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Date: March 5, 2008

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